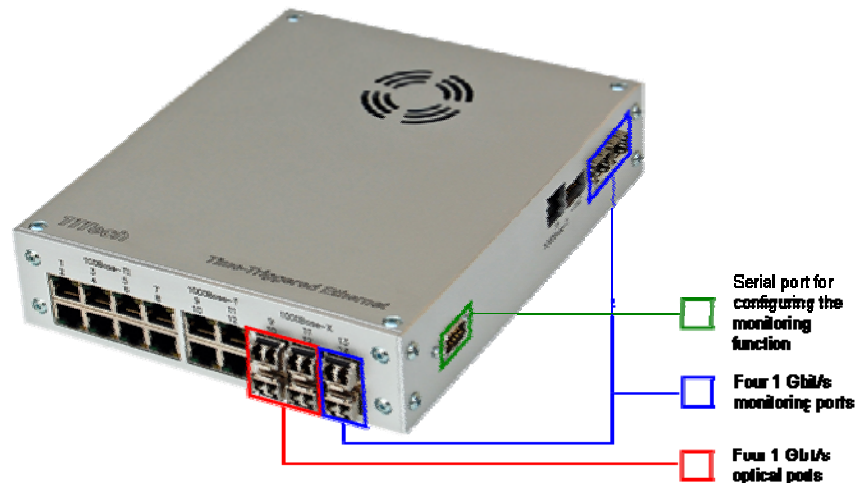


TTE Monitoring Switch

Monitoring the Traffic of a TTEthernet Network



Switches in TTEthernet maintain the hard real-time data communication and take care of partitioning among standard Ethernet, rate-constrained, and time-triggered Ethernet message traffic. High-priority time-triggered messages are routed through the switch according to a predefined schedule with transport delay jitter in the sub-microsecond range.

The TTE Monitoring Switch supplies full TTE Development Switch capabilities and enhances these regular switching capabilities with its powerful monitoring functionality. The monitoring function allows the user to easily gain in-depth insights of all communication in a TTEthernet network. TTTech's TTE Monitoring Switch has been designed for monitoring all traffic classes of a TTEthernet network. Besides rate-constrained and best effort traffic, specifically the time-triggered traffic can be mirrored with minimal delay (technological latency). The switch offers an easy-to-use monitoring and debugging solution, speeding up rapid-prototyping development processes and enabling conveniently monitoring of TTEthernet networks.

KEY FEATURES/BENEFITS

- 4-port 1000-BASE-X switch including 4 additional monitoring ports
- Simultaneous port mirroring
- Configurable RX/TX direction per port
- Recommended use in conjunction with TTEthernet
- Allows recording of 1 Gbit/s

The TTE Monitoring Switch is equipped with four 1 Gbit/s monitoring ports. For each monitoring port, it is possible to select an arbitrary receiving Rx/ transmitting Tx line of a regular port for data stream replication. This selection can be reconfigured dynamically by a dedicated software tool, using the RS232 serial port that is provided with the TTE Monitoring Switch. The TTE Monitoring Switch allows to replicate data streams of the regular four 1 Gbit/s ports onto dedicated monitoring ports.

The selected data streams can be easily captured on the respective monitoring port by recording devices or protocol analyzers. TTTech's optionally available product, the TTE Monitoring System, allows logging, viewing and analyzing TTEthernet data streams.

Monitoring Features

- 4 x 1 Gbit/s Ethernet ports dedicated to monitoring function, GMII interface (monitoring ports equipped with 1000 Base-SX optical SFP modules, LC connectors)
- Speeds up rapid prototyping and enables easy debugging of TTEthernet networks
- Monitoring ports can be configured for mirroring either the Rx or Tx line of an arbitrarily selected regular port
- Rx/Tx line selection can be done by a software tool using the RS232 serial interface
- Rx/Tx line selection can be changed dynamically without restarting the switch
- Full 1 Gbit/s speed and no packet losses on the monitoring ports
- Identical message timing on the monitoring ports

Switch Features

- 4 x 1 Gbit/s Ethernet ports, GMII interface
 - 4 x 1000 Base-T using RJ45 connectors
 - 4 x SFP slots equipped with 1000 Base-SX modules using LC connectors
 - For each of the four available ports either the 1000 Base-T or the respective 1000 Base-SX port can be chosen for use
- 8 Gbit/s cross-sectional bandwidth
 - Full-duplex operation in parallel on all ports
 - Store-and-forward architecture
 - 192 kB frame memory
- Quality of service on layer 2
 - Support of critical traffic (time-triggered/ rate-limited) and non-critical traffic (standard Ethernet) with strict priorities
 - Traffic class assigned on Ethernet multicast address basis for max. 4 k critical traffic frames
 - Strict priorities
 - Resource reservation for low-latency time-triggered frame relay

- Clock synchronization
 - Configurable up to dual fault tolerance
 - Support for up to 4 clock masters at 4 different priorities
 - Multi-hop support
 - Jitter below 1 microsecond
- Schedule capabilities
 - Up to 4 k scheduled events
 - Up to 4 periods from 100 microseconds to 1 second executed in parallel
- Management module
 - Manageable via network (configuration data download, diagnosis data queries) through standard Ethernet frames
 - End-of-line programming support through multi-hop capable bootstrap mode
- Diagnosis through request-response protocol or automatic periodic transmission of programmable diagnostics data to programmable destination

Hardware Specification

- Environmental Operating Ranges:
 - Lab equipment
- Power supply: AC Input Voltage: 100 to 240 VAC, autoranging, 2.5A, 50-60Hz
- Dimensions: 48 x 190 x 233 (in mm)
- Weight: 1449 g

Order Number

- HE03.01.0: 4 + 4 ports, up to 1 Gbit/s
- HE03.10.0: 4 + 4 ports, up to 1 Gbit/s without ^{TTE}Load and ^{TTE}View

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